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## Addressing climate change at a much younger age than just at the decision-making level: Perceptions from primary school teachers in Fiji

Peni Hausia Havea, Apenisa Tamani, Anuantaeka Takinana, Antoine De Ramon N' Yeurt, Sarah Louise Hemstock and H el ene Jacot Des Combes

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### Abstract

This study uses an explanatory design to investigate the role of primary education in addressing climate change in primary schools in Fiji. A self-administered questionnaire (N=30) was conducted with primary school teachers from 14 primary schools in Fiji. Using frequency analysis, all teachers perceived that addressing climate change at a much younger age is more effective than just addressing it at the decision-making level. Furthermore, a Kendall tau-b was performed, and identified a significant correlation between the primary school teachers' location and recommendations for further training on climate change ( $\tau_b=.59, p<.001$ ) and work relevance and climate evaluation ( $\tau_b=.6, p<.001$ ). The same factors (e.g. work relevancy, helping primary education adapt to climate change, etc.) were explored qualitatively using desktop review, literature search and found addressing climate change at a much younger age to be significant. These results are expected to perfect not only the role of primary education but to contribute significantly to the achievements of a climate-resilient Fiji by 2030 and beyond.

**Keywords:** Pacific, climate change, primary education, policy, teachers, resilience

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## 1 Introduction

According to the United Nations Educational, Scientific and Cultural Organization (UNESCO) (UNESCO, 2017a), by 2030, all learners on primary education need to acquire knowledge and skills not only needed to know how to promote sustainable development but also averting climate change (UNDP, 2015; UNESCO, 2017b). For this state-of-the-art goal needs to be met by the Pacific region, then it is significant for Fiji and other Pacific Islanders to look at climate change, not just in terms of many people are being affected, but also how it influences political leaders and people positively so their lives become more resilient and sustainable in their own communities. (Dalelo, 2011; Hammersley-Fletcher, 2008; Karpudewan, Roth, & Abdullah, 2015; Lenti Boero, Clerici, & Perrucci, 2009; Pacific Community et al., 2016).

In the literature, a post-positivist theory is what Bloom, Hentschel, and Bella (2010) called collegiality amongst primary school teachers. This positive spirit of collaboration can go beyond teachers to their learners and most importantly to where these children live leading to improving climate resilience effectively at the household level. This is expected to result in a top-down approach (Lata & Nunn, 2012), where primary school teachers influence their students positively and their students influence the community, accordingly (e.g. improving community resilience [Climate Change Adaptation and Disaster Risk Reduction] to climate change) (Bibi Abdullah & Kassim, 2012; Bynoe & Simmons, 2014; Dalelo, 2011; Hammersley-Fletcher, 2008; Karpudewan et al., 2015; Özdem et al., 2014; Santos, Ferreira, & Reis, 2008; Tsaliki, 2017; Usman, 2008; Van Dam, Damen, & Sanders, 2015).

However, this pathology of power (Farmer, 2005) and leading-edge development to improve climate adaptation and disaster risk reduction has been overlooked by climate change educators and policy-makers who focused primarily on higher educators (e.g. secondary education and above) (Akrofi, Antwi, & Gumbo, 2019; Nagy et al., 2017; Verlie, 2018; Walshe et al., 2018). As a result, the perceptions of primary school educators and praxis are missing out from the national adaptation plan, especially in countries that are severely and overly affected by climate change. Most importantly, Ledley, Rooney-Varga, and Niepold (2017) did not support this insurmountable types of climate solutions, especially when addressing climate change via education – preferably it needs to include all level of society and primary school teachers are no exception (Henderson et al., 2017).

This deficiency in research allows this paper to contribute to the literature in two principals ways. First, to provide empirical evidence that primary school educators may contribute to the national climate change convention and adaptation effectively. Second, to share experiences of how primary education in Fiji may impact climate adaptation positively for others in the Pacific. This state-of-the-art idea is such an important milestone in the formulation and the achievements of resilient Pacific Islanders for Fiji and other countries in the region at large (Buckland et al., 2018; Henderson & Mouza, 2018). Simply, because apparently schools who have already integrated and/or planned for integrating climate change into their curricula have their children and peers becoming more ecocentric and less homocentric (Hestness et al., 2011; Lambert & Bleicher, 2013; UN CC: Learn, 2013) in their attempts to adaptation. To act on this problem, the Government of Fiji's response to this call could be by addressing the roles of primary education in climate change.

At the regional level, the SPC/GIZ programme 'Coping with Climate Change in the Pacific Island Region' (CCCPIR), has supported Pacific Island Countries (PICs) and regional organisations in building their capacities to cope with the anticipated effects of climate change

that will affect communities across the region (SPC & GIZ, 2016). Focusing on primary, secondary and TVET education, the CCCPIR programme supported the Ministry of Education and Training institutions in Fiji to integrate climate change into primary education aiming to equip children from aged 6 to 11 (Education Policy and Data Center, 2014) with the knowledge and skills required to live up coping with the effects of climate change. Significantly, from what is known from the literature, Fiji is amongst the first Pacific country in the world, along with Malawi from the African countries (UN CC: Learn, 2013) and the UK in Europe (Oxfam, 2015), to have climate change fully integrated in its primary schools curricula (S. Mesquita & Bursztyn, 2016; SPC/GIZ, 2018; UN CC: Learn, 2013).

Integrating climate change into the school course of study for Fiji is critical if the country wishes to build a sustainable and resilient school campus (Özdem et al., 2014). From a climate change perspective, this is vital because if children would understand the causes and consequences of climate change, then, in reality, they and their families and/or their communities could do anything conceivable to protect themselves from these negative impacts of climate change and/or disasters caused by extreme weather events (Dalelo, 2011; Karpudewan et al., 2015; Lenti Boero et al., 2009).

These children are tomorrow's business leaders, decision-makers and political leaders (e.g. which could be seen as islands of tomorrow, if high-quality education and proper nourishment will be given to them). Consequently, primary education plays a significant role in responding to climate change (Chang, 2012; Hammersley-Fletcher, 2008; Satchwell, 2013; Thomalla & Djalante, 2012; UN CC: Learn, 2013; Vines et al., 2014; Vogel, Schwaibold, & Misser, 2015). Most importantly, that is why Fiji was chosen as a case study for this paper.

Fiji is a Melanesian republic state and archipelago comprised of 332 islands and 552 small islets (Bissessar, 2017), of which 110 are permanently inhabited over a land area of 18,333 km<sup>2</sup>, with a total ocean area of 194,000 km<sup>2</sup> (Department of Environment, 1997; Pacific Community (SPC), 2012). The archipelago is located between the longitudes 17.4° E and 17.8° W and latitudes 12° S and 22° S (Pacific Community (SPC), 2012) (Figure 1). According to the Ministry of Education (Ministry of Education, 2016), there are a total of 750 primary schools in Fiji, including in special education. The total number of primary school teachers serving the nation in 2016 was 5,727.

The nation is ranked number 15 most at risk in the world with a risk index value of 13.50% (Bündnis Entwicklung Hilft, 2017). Resultantly, it is one of the highest risk countries to be affected by climate change and disasters caused by extreme weather events besides Vanuatu, Tonga, the Solomon Islands and Papua New Guinea. Because climate change is known to affect the livelihoods, health, well-being, national economies and education in Fiji and the Pacific (Chand & Walsh, 2009; Government of Vanuatu, 2015; Luetz & Havea, 2018; Maeke, 2013; Reardon & Oliver, 1983; Woodroffe, 1983), there is a need for critical evaluation on the role, primary education plays in addressing climate change challenges and opportunities for the people of Fiji. The reason is that the roles that primary education plays in addressing climate change are unclear (Ministry of Education, 2016).

This study will be used to fill this gap in knowledge and needs for research on the perceptions of primary school teachers and integration of climate change education into the primary school curricula in the country. Hence, based on the perceptions of primary school teachers, this paper intends to provide a better understanding as to why addressing climate change at a much younger age is more effective and efficient in responding to the impacts of climate change than just at the decision-making level.

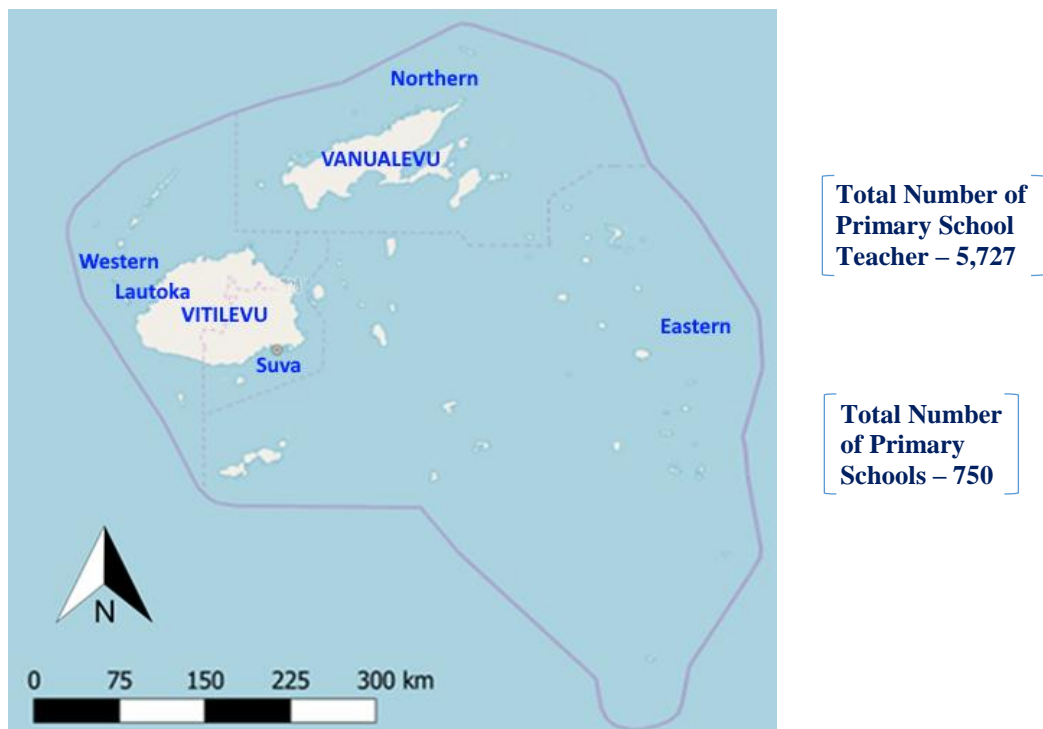


Figure 1: Map of Fiji. Created by Peni Hausia Havea, 2019. Total number of primary schools and teachers were taken from the Ministry of Education (2016)

## 2 Methods

The study used a mixed method approach (Havea, Hemstock, & Jacot Des Combes, 2017).

### 2.1 Methodology

A mixed-method design named explanatory (Creswell & Plano Clark, 2011), was used to gather all the quantitative information for this study. These data were collected from workshops and training sessions of primary schools teachers in Fiji between 2016 and 2018. The teachers who were selected represented 14 different primary schools in the country. The quantitative data were mainly from surveys (N=30) based on the evaluation of the teachers after their training on climate change based on the school curriculum. The qualitative aspect of the study focused on data collected from personal communications, desktop review, online searches and reviewed of project documents on CCCPIR and climate change in Fiji. The study approach was called explanatory (Creswell, 2014) because this paper has relied heavily on the quantitative aspect of the study. Unfortunately, due to time constraint, there was no donor available at the time to fund this work.

### 2.2 Data analysis

The data analysis used an explanatory design model (Creswell, 2013). For the quantitative data, frequency plot analysis and Kendall tau-b were calculated. The frequency plots used r studio and SPSS for the Kendall tau-b. These results were then analysed using thematic analytical strategy (e.g. themes). In this strategy, the quantitative results were explored qualitatively and vice versa. Meaning, the same factors (e.g. result from the frequency plots and Kendall tau-b) were merged with the qualitative data by taking one piece of theme, information or idea and compared with the quantitative results, iteratively. This was done in order to provide a better

understanding as to why addressing climate change at a much younger age, is more effective in responding to the impacts of climate change than just at the decision-making level. The data analysis was also performed using QGIS for mapping (Cronk, 2017; Schwarts, Wilson, & Goff, 2015).

### 2.3 Limitations

Despite significant effort made to improve the reliability and validity of the study, there are always limitations with regard to the collection of data. In this instance, the researchers were unable to include findings from personal oral in-depth interviews. Therefore, individual teacher's in-depth perceptions and nuances are absent from the results. However, qualitative data has largely been drawn from the primary school teachers' written accounts and open-ended answers obtained during quantitative data collection. This information complements the quantitative analysis. Other information used to assist the qualitative analysis has been taken from reviewing project documents, desktop review, online stories, debating and vlogging (e.g. publish of opinion or polls online) of primary school teachers and others on the subject. This method allows this paper to reach its valid conclusion.

## 3 Results

Based on this sample and the data available for this study, the following results and implications are presented. Six reasons why addressing climate change at a much younger age is significant than just at the decision-making level were identified:

- 1) national priority;
- 2) teachers have optimal facilitation skills;
- 3) sense of duty;
- 4) climate awareness;
- 5) combat climate skepticism and anxiety;
- 6) biblical message.

### A) National Priority

#### 3.1 **More than 90% of teachers in the study perceived that integrating climate change on the curriculum aligned with the Ministry of Education priorities and implication for integrating climate change into the school curricula in Fiji**

Of the 30 teachers selected to participate in the study, 96.7% (29) perceived that the training in integrating climate change into the school curriculum applied to their teaching careers and improving the knowledge of their primary schools' children to resilience (CCA & DRR) (Figure 2).

During an online opinion polling for primary school teachers regarding the question "should climate change be taught in schools?", interestingly a participant expressed climate change education in the form of children right and as a national priority:

"Students have a right to know how to adapt to the impacts at a younger age. It is like any other subjects like English and Science. It is the duty of the Education System to teach climate change at a younger age in order to help them adapt better now and in the future. Students have a right to improve their knowledge regarding the solutions to climate change through education"(Debate.org, 2018).

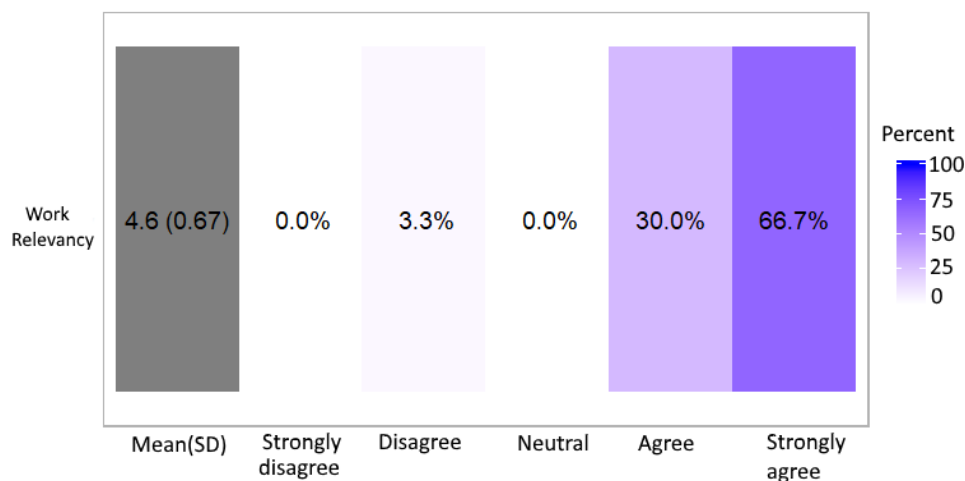


Figure 2: Percentage of primary school teachers who perceived that the climate change training that they attended was relevant to their work

The same point emphasised during the workshop with the primary school’s teachers in Fiji (Figure 3) that such training of teachers on integration of climate change into the school curricula is not only relevant but is also aligned with national processes and activities. Prompting the Ministry of Education and line ministries for taking the lead in implementing this policy for Fiji and the region is vital (SPC/GIZ, 2018).



Figure 3: Participants and trainers from workshop and training of primary school teachers in Fiji on the integration of climate change into the school curriculum

The implication of this result on policy for the education in Fiji is that climate change will be integrated to all primary schools education in the country by 2030.

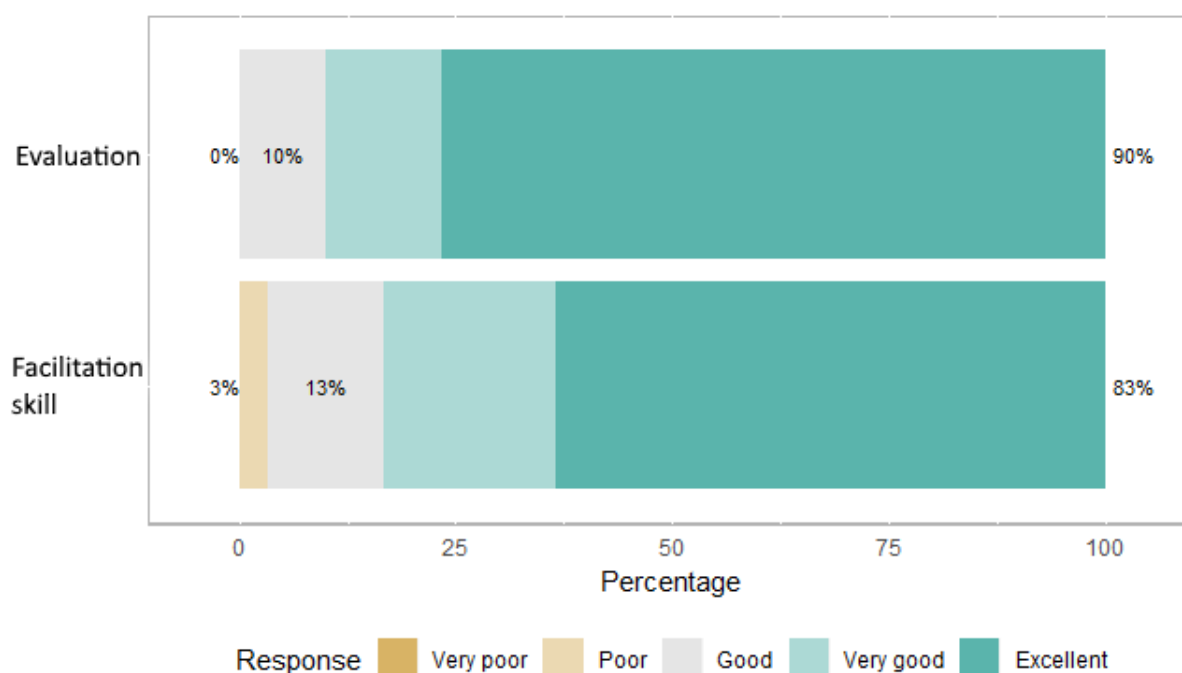
**B) Facilitation Skills**

**3.2 Training of climate change education teachers with good facilitation skills at Fiji’s Teachers Training: an implication for integrating climate change education into the Fiji Teachers Training programme**



Adding to the above state of climate change relevancy, ensuring teachers facilitation skills to be professional and be able to cater to a younger age students degree of understanding is also significant. As indicated in this study, 96% of the primary school teachers who attended the training perceived that facilitation skills are essential (Figure 4).

Importantly, to evaluate whether those facilitation skills and other attributes are relevant to integrating climate change into the school curriculum, a frequency analysis revealed that all primary school teachers in the study indicated that not only it is coherent but that the whole climate change integration training programme was excellent (Figure 4). Outside the PICs, a Science Teacher from Algonquin Middle School Des Plaines, I11, USA goes beyond this state-of-the-art integration by stating: "I'd been considering making it a mandatory subject" (Harmon, 2017) showed that some countries may already ahead on this curve.



*Figure 4: Percentage of primary school teachers who rated the facilitator skills and evaluated the training as excellent*

The same point was made by Tameka Wallace on the online polling for primary school teachers. She stated explicitly:

"Yes, young people need to understand climate change. Climate change is a major issue that all young people need to learn about because it will affect their future. Students need to understand the factors that have led to climate change and the ways in which they can remedy this issue. In the future, the young people are the ones that will have to remedy the issue of climate change in the world" (Debate.org, 2018).

The implication of this result on the role of education in addressing climate change for Fiji are two folds. First, to have a policy that allows integrating of climate change education into the primary school education teachers training programme. Second, the training of teachers should focus and master the facilitation skills of the course.



## C) Sense of Duty

### 3.3 Teachers felt that it is their duty to teach climate change to the much younger age student

Further to perfecting the facilitation skills, a Kendall tau-b was performed and concluded that there is a significant and positive correlation between the primary school teachers location (e.g. remoted areas) and recommendations for further training on climate change ( $\tau_b=.59, p<.001$ ).

Table 1: The relationship between primary school teachers location and recommendations for integrating climate change into the school's curriculum

	Location	Recommendations
Location	----	.588**
Recommendations	.558**	----

\* $P<0.05$ , \*\* $P<0.01$ .

Because there is a positive and significant relationship between climate change and primary school teachers who perceived to teach this in their schools, from a climate change perspective, this could mean that teachers felt it is their responsibility to educate these young generations about climate change. As pointed out in the workshop, although some schools have already taught climate change, the challenges are to have a strong partnership with the government and its partners to nationalise this in Fiji. Other challenges may include but are not limited to addressing issues such as need for staff training (e.g. logistics and venue) and prevent staff turn over effects on schools system (SPC/GIZ, 2018).

There are two implications for this result. First, teachers show a high-level of compliance to integrate climate change into the school curricula. Because teachers seemed to agree with this cutting edge approach, the implication is that climate change will be integrated into school curricula at the national level. Second, because of their sense of duty to fulfil, teachers will do it no matter what. This indicates that most likely all primary school teachers in Fiji will accept this proposal and do it.

## D) Climate Awareness

### 3.4 Increase level of climate change awareness to include all primary schools in Fiji

From what is known in this current study, teaching climate change at a much younger age is not only a sense of duty, but according to Sarah Murphy, a Science Teacher, at the Algonquin Middle School Des Plaines, Ill, USA: "Our students need to have an awareness of an issue/problem they can hopefully solve" (Harmon, 2017) at a much younger age and throughout their lifetime. In supporting this point, a Kendall tau-b was performed and concluded that educating young children on climate change is relevant not only to their current living condition but also throughout their lifetime ( $\tau_b=.60, p<.001$ ).

Table 2: The relationship between work relevancy and climate evaluation

	Location	Climate evaluation
Location	----	.600**
Climate evaluation	.600**	----

\* $P < 0.05$ , \*\* $P < 0.01$ .

Since climate change is integrated into the primary schools curricula for Fiji, the implication of this result will be on increasing the level of communication and awareness of students and peers about climate change. Be it climate change impacts or solutions. As a result of exposure to climate change at a much younger age, students tend to deal with it better as they grew old (Ahdoot, 2015).

### E) Combat Climate Skepticism and Anxiety

#### 3.5 To combat climate skepticism and ease climate anxiety while they are at a much younger age to help them cope with worriedness and post-traumatic stress disorder when they grow up throughout their lifetime

More importantly, adding to the above state of affairs, Joshua Moses, an Assistant professor of Anthropology, Haverford College Haverford, Pa, USA, stated that climate change education “always include an empowering message. Some teachers felt their lessons might both persuade skeptics and ease the anxious” (Harmon, 2017).

He then continued:

“Cooking creates an approachable platform to teach basic thermodynamic concepts. Everyone is interested in why a pizza stone results in a crispier pizza crust! Once they understand these concepts, the energy balance of the climate system is easy to understand” (Harmon, 2017).

In one way or another:

“It is also a great way to promote climate optimism as there is much we can in our food system to have a significant impact, this is what students want to know. Always include an empowering message – we can do this!” (Harmon, 2017).

However, this is intriguing because according to Havea, Hemstock, and Jacot Des Combes (2018a), Tonga is one of the most worried nation affected by climate change and hazards because of the effects of climate change on their livelihoods, health and well-being (Havea et al., 2017; 2018a; Havea, Hemstock, & Jacot Des Combes, 2018b), based on the response of 92.4% (425) of the 460 participants to a study on this issue (Figure 5).

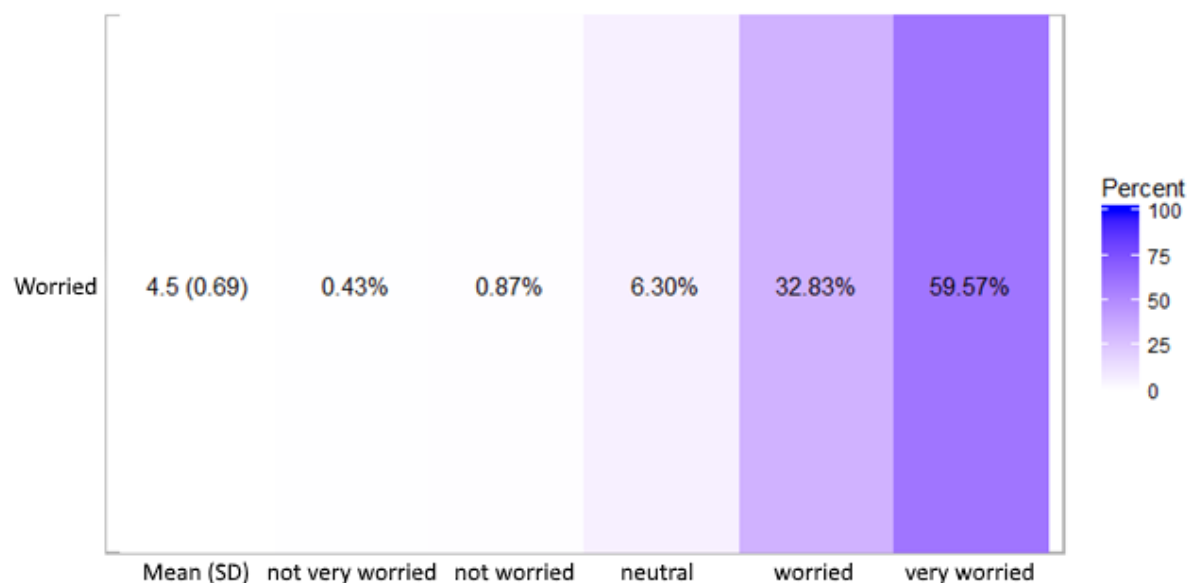


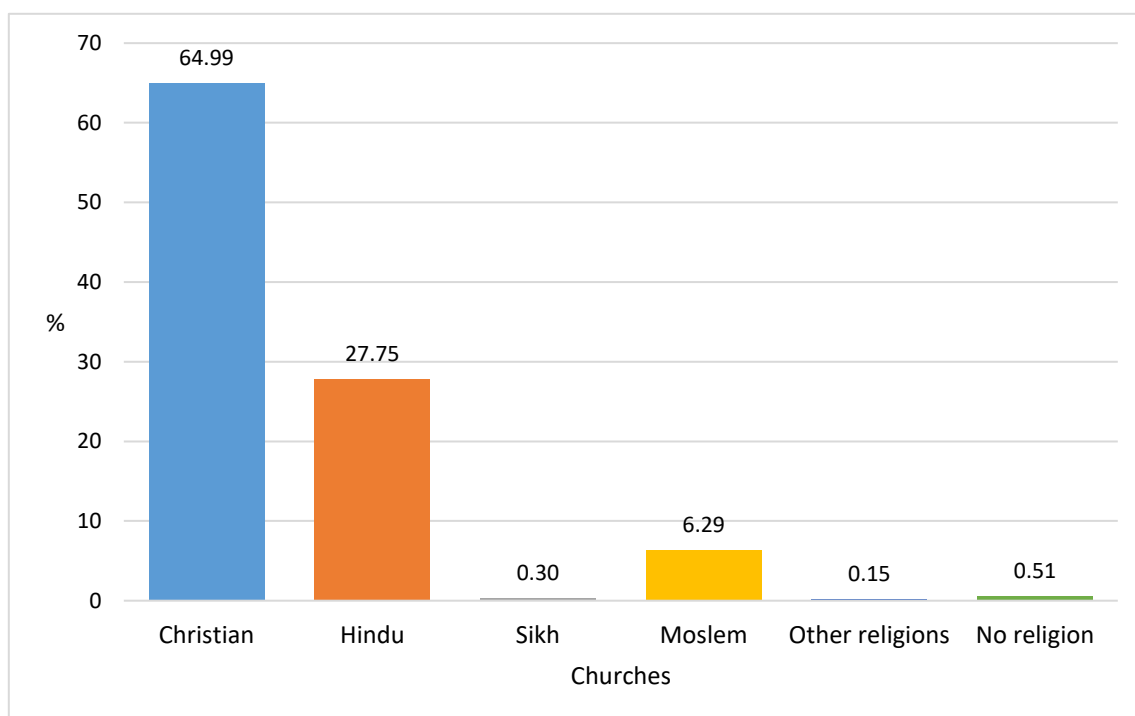
Figure 5: How worried are you about the impacts of climate change and disasters on your well-being?

Nevertheless, albeit this study has conducted in Tonga, this paper believes that the result may yield a significant finding as well in Fiji due to its same system of belief as Tonga (Havea et al., 2017; 2018a). The implication of this result, is that learning about climate change at a young age helps in addressing climate scepticism and anxiety in schools and at the national level in Fiji and alike in the Pacific. Once this policy is implemented, people may know how to deal with the psychological impacts of climate change on their health through their children (UN CC: Learn, 2013; WHO, 2015). As a result, it is pivotal to integrate climate change into the school curriculum in Fiji and/or Tonga.

## F) Biblical Message

### 3.6 A message from the Bible: To teach or educate young children about climate change and/or hazards

In a final point, although this is controversial, due to Fiji's high proportion of Christians at 65% (Fiji Bureau of Statistics, 2007) (Figure 6), educating young children about climate change impacts and adaptation while they are young enough to learn is also aligned with the Biblical teaching of King Solomon about being wise in Proverbs 19:18 (Howells, 2010; The Bible Society in Australia, 1988). As a result, teaching climate change at a much younger age is not only a human right issue and climate change concerned but also a God's will to educate children about this global phenomenon as a mean of making the right decision in their journey to be an adulthood, whether they are future leaders (e.g. political, business) or not.



*Figure 6: Different types of religions in Fiji. The Christian churches include Anglican, Apostolic, Assembly of God (AOG), All Nation Christian Fellowship, Baptist, Roman Catholic (RC), Christian Mission Fellowship (CMF), Church of Christ, Gospel, Jehovah's Witness, Latter Day Saint (LDS), Methodist, Pentecostal, Presbyterian, Salvation Army, Seventh Day Adventist (SDA), United Pentecostal and Other Christians*

Source: Fiji Bureau of Statistics (2007)

Additionally, research suggests that Christian theological, hermeneutical and eschatological perspectives on environmental sustainability and the care of God's creation may also harness for climate change adaptation in the Pacific islands contexts (Luetz, Buxton, & Bangert, 2018; Nunn et al., 2016). In the context of Fiji and Tonga, this is especially relevant.

As stated by the Permanent Secretary (PS) for Education, Heritage and Arts of Fiji, Mr Iowane Ponipate Tiko in 2016:

"The Ministry of Education, Heritage and Arts ensure that the children of this nation are provided with equitable and affordable education" (Ministry of Education, 2016), inclusive of climate change

indicated that the Ministry is also doing God's will.

In his final remarks, he stated that: "May GOD continue to bless our beloved Fiji" is also reflected his belief as Christian is significant to the state-of-the-art idea of teaching climate change at a much younger age in Fiji (Ministry of Education, 2016).

The implication of this result in addressing climate change in Fiji is that people are pleasing their Christian God by doing His will (e.g. integrating climate change into the school's curriculum or doing the same thing) (Bible Society of the South Pacific, 1966). This Biblical teaching, interpretation and Christian perceptions were influenced by churches as well. So, telling a climate change story to a kid (e.g. the story about Noah and others), are not only at the policy level but most importantly, it shows that climate solutions through primary education,

art and God are work as well (Havea et al., 2018a; Ministry of Education, 2016; The Bible Society in Australia, 1988).

#### **4 Discussion**

Primary school teachers agreed on the importance to address climate change at a much younger age rather than just at the decision-making level have participate to this national adaptation development. Significantly, it is evidenced by this study also that they consider it is their duty ( $\tau_b=.59$ ,  $p<.001$ ) and relevant to their roles as primary school teachers to teach climate change at their schools ( $\tau_b=.60$ ,  $p<.001$ ). In addition, from a psychological perspective, for the children, the school system offers them a sense of security, better health, happiness and well-being (Erricker, 2009) – a win-win situation. As a result, the benefits of implementing this approach for the people of Fiji and implication for policy are seen as a sine qua non condition for the building of a resilient Fiji by 2030 and beyond (Magee et al., 2016; Ministry of Education, 2016). There are several reasons why this state-of-the-art development in primary education is favourable for the general population of Fiji.

From a legal perspective, according to Fiji's Constitution on Rights of Children, all children including those with disabilities have the right to education, good health care system and protection from the impacts of climate change and hazards (Government of Fiji, 2013). Therefore, if this is the case, then every primary school student also has a right as a human being and/or individual to learn about climate change from a much younger age, and not when they are just at the decision-making level. This concern for human rights is also aligning with the Framework for Resilient Development in the Pacific (FRDP) (Pacific Community et al., 2016) as well as the United Nations Sustainable Development Goals (SDGs) (UNDP, 2015). More importantly, if Fiji wishes to become more resilient, the integration of climate change into the schools' curriculum must also be nationalised because one way or another this will ensure that education and training programs are designed to allow and encourage individuals to understand and to take action on mitigation and adaptation, which is the hallmark of climate change education and training.

In addition, according to the Ministry of Education in Fiji (Ministry of Education, 2016) and primary school teachers in this study, the integration of climate change into the school's curriculum is twofold. First, it is a national priority. Second, it is parallel with the Education for Sustainable Development (ESD) goals, objectives and targets by 2030 and beyond (UNESCO, 2006; 2017a) and education for all. Based on this result, the government's decision to incorporate climate change issues at Fiji's primary, secondary and tertiary school curriculum is not only meant to create greater awareness but is also significant participation at the national level to mitigate and adapt to this global phenomenon.

As stated by Mr Hem Chand, the Director for Primary Education for the Ministry of Education in Fiji, while speaking to more than 300 Early Childhood Education (ECE) teachers conference in Lautoka, teachers have the power to develop solutions for climate change and participate in a building of a resilient Fiji. He said: "Imagine the social, cultural and environmental impact these practical classroom lessons would have on young minds of our ECE students who later become future leaders, policy makers and think tanks of our society" (Nasiko, 2018).

He continued: "If we want to see the current generations of ECE students transform into champions of our environment and our future, ECE teachers have to play a part in their learning experience" (Nasiko, 2018). In his final remarks, he then put teachers at the forefront of

addressing these issues on climate change: “I earnestly appeal for all participants to consider your decisive roles and responsibilities in bringing into reality our common goals” (Nasiko, 2018). As a result, Fiji could become a model so that other PICs can learn from it before adopting this approach to their education system. This proposition could be discussed with other PICs during the Pacific Leadership Forum and other high-level meetings with school leaders in the region.

More importantly, because climate change is a priority for Fiji political leaders (Government of Fiji, 2018) and the general public are also aware of the importance of this issue to their children, there is an obligation of the school system and especially the teacher to educate them in accordance to their elders’ wishes (Ministry of Education, 1978). As indicated above, if all primary school teachers in the study agree to integrate climate change into the school curriculum in Fiji, then it is left now for the government to set their goals and planned to nationalise teaching of climate change to all primary schools, ideally between the next Conference of Party (COP24) meeting and the year 2030 or after.

This climate operation is fascinating because although Fiji is secular when it comes to climate change adaptation, both State and Church work together as one in building the capacity of the people of the nation to become more resilient by 2030 and beyond. From a religious viewpoint, this integration has been inline also with God’s willing framework in the Bible (Howells, 2010; The Bible Society in Australia, 1988) and research on Christian theological, hermeneutical and eschatological adaptation, in the form of using Bible and Church to tackle climate change on the ground and/or to adapt to the effects of climate change negatively in Fiji (Luetz et al., 2018; Nunn et al., 2016).

For the primary school teachers, who have claimed themselves to be Christian in the study, they perceived that integrating climate change into the school curriculum and teaching children (e.g. discipline) about it is not only a duty attributed by law but also fulfils carrying out God’s plan. A positive influences attributed by teaching of the Bible in the Churches that they belong to. In this paper, the concept of discipline in the Bible is broad. It could mean a branch of knowledge, to teach, to educate, or field of study (Bible Society of the South Pacific, 1966; Lewis, 2015; Oxford University Press, 2019; The Bible Society in Australia, 1988).

In the context of Fiji, this is highly relevant, since more than half of the total population (65%) belong to a Christian denomination (Fiji Bureau of Statistics, 2007). Interestingly, although Fiji has already declared itself a secular state in 2013 (Government of Fiji, 2013), the fact that Christianity is the dominant faith in the nation, reflect the belief that using Biblical principles to relate climate change to education and/or to adapt to the negative effects of climate change is significant. This application of Christian theological, hermeneutical and eschatological teachings is also relevant in the context of Tonga (Havea et al., 2017; 2018a).

Despite good intention by primary school teachers in Fiji to integrate climate change into the national school curriculum, there are still challenges. First, there is a need to develop relevant and locally relevant materials on climate change, secondly, train all primary school teachers in Fiji on climate change. Thirdly, the costs for logistics, training budget and reservations of venues must be met, accordingly. Fourthly, the school system in Fiji should have a plan to eliminate and account for the impacts of staff turnover due to relocation, new jobs, retirement inter alia (Iqbal, 2010; Surji, 2013). As a result, the findings of this study may lead to a policy for the Government of Fiji to integrate climate change first into Teacher Training Institution program before teachers are sent to their school location and employed as teachers.

And while doing that it is also critical to train teachers already in the school system who have not yet acquired necessary skills and knowledge to teach climate change. Realistically, this is the way forward for Fiji and for any other PICs who will be integrating climate change into their schools' curriculum.

## **5 Conclusion**

The purpose of this article was to provide a better understanding of why addressing climate change at a much younger age is significant. This aim has achieved, and consequently, there were four lessons learnt from this paper.

First, the children have a right to have a good knowledge about the science of climate change so to help them mitigate and adapt to the effects of climate change including disasters caused by extreme weather events. As a result, they can become more resilient, now and in the future. Secondly, addressing climate change at a much younger age is also aligned with the Ministry of Education development goals. Thirdly, the primary school teachers felt that it is their obligations and duty to teach young children about climate change at a much younger age than just at the decision-making level. Fourthly, from the Christian Bible it is God's will to learn climate change impacts and adaptation at a much younger age.

Based on these lessons learnt, to ensure that the Government of Fiji is achieving a resilient Fiji by 2030 and beyond, this paper recommends the Ministry of Education to have primary teachers train on climate change and then integrate this topic to all primary schools in Fiji. The reason is simple: this top-down approach should start with the primary school teachers while they are still in training before entering the workforce. Once the teachers have mastered climate change, then it would be easy for them to convey these principles to the children they teach in order to save themselves from climate change and/or disasters caused by extreme weather events.

For the future, based on this study this paper recommended that researchers should explore the following areas of study:

- 1) Cost-effectiveness analysis of integrating climate change into the primary school curricula in Fiji;
- 2) Relationship between the teaching of climate change to children in the primary education in Fiji and community-based adaptation;
- 3) Long-term effects (negative and positive) of educating young children about climate change impacts and adaptation: a longitudinal study.

If these realisations do not met, it is in the best interest of this paper to follow-through the Ministry of Education latest or the government updated annual plan. The main reason is that because this development originated and conducted by the Government of Fiji.

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